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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 10 030,133      | 03/19/2002  | Matthias Fryda       | P21932              | 8161             |

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EXAMINER

KIKNADZE, IRAKLI

ARTICLE PAPER NUMBER

2882

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Please find below and/or attached an Office communication concerning this application or proceeding.



## DETAILED ACTION

### *Claim Rejections - 35 USC § 103*

1. Claims 1-9, 15 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sahores (US Patent 4,159,37) in view of Imai et al. (US Patent 5,173,612).

With respect to claims 1-3, Sahores discloses (Fig. 1) an X-ray anode (11), characterized in that the anode (11) material is located on the X-ray window (3), characterized in that the thickness of the X-ray window (3) is in the range of 300  $\mu\text{m}$  to 2000  $\mu\text{m}$  (column 4; line 6-44).

With respect to claims 4-7, the X-ray anode (11) is a metal and the anode (11) material thickness is between 1  $\mu\text{m}$  and 25  $\mu\text{m}$  (column 4; lines 45-49).

With respect to claims 8 and 9, the anode (11) material may completely or partially covers the window (3) (column 4; lines 18-24).

With respect to claims 15 and 16, the X-ray anode is used for X-ray units (column 1; lines 5-14). Sahores discloses that X- window (3) which is made of a thin shell may be made of any material which is transparent to the X-ray radiation, obviously that material can be a diamond too. Further, with respect to claims 1, 4-9, 15 and 16, Imai et al. discloses (see abstract) an X-ray diamond window for X-ray apparatus

characterized by high transparency for X-rays, high flatness, and high strength (column 1;

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With respect to claims 2 and 3, Imai discloses that X-ray window can be a polychrystalline or monoccrystal diamond window (column 1, line 65 – column 2, line 20).

It would have been obvious to one ordinary skill in the art at the time of the invention was made to employ the X-ray windows made from diamond in the Sahores invention, in order to achieve high transparency for X-rays, high flatness, and high strength. It has been held to be an obvious matter within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use. in re Leshin, 125 USPQ 416.

2. Claims 10 -12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sahores (US Patent 4,159,37) in view of Imai et al. (US Patent 5,173,612) and in further view of Diemer et al. (US Patent 4,622,688).

With respect to claims 10 -12, Sahores in view of Imai show generally all elements of the invention except disclosing that an intermediate layer is provided between the X-ray anode and the X-ray window. Diemer discloses (Fig.3) an X-ray tube (1) comprising an X-ray anode (13) and an X-ray exit window (6) and an intermediate layer (12) is provided between the X-ray anode (13) and the X-ray window (6) (column 3; 27-50). The intermediate layer may be a radiation filter. Diemer X-ray apparatus is suitable for use in an X-ray analysis apparatus, which is constructed to demonstrate the presence in a specimen of element having a low atomic number (first layer of anode

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layer (12)). Consequently, it is unnecessary to change the X-ray tube during the execution of a complete analysis (column 3; lines 50-65).

It would have been obvious to one ordinary skill in the art at the time of the invention was made to provide the transmission X-ray tube comprising the intermediate layer between the X-ray anode and the X-ray window, as taught by Diemer in order to selectively produce an X-ray beam containing a comparatively large amount of long – wave as well as short wave radiation, without affecting the outside construction, shape and useful properties of the X-ray tube.

3. Claims 13 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sahores (US Patent 4,159,37) in view of Imai et al. (US Patent 5,173,612) and in further view of Kitade et al. (US Patent 5,809,106).

With respect to claims 13 and 14, Sahores in view of Imai show generally all elements of the invention except disclosing a temperature sensor for the X-ray apparatus. Kitade discloses an X-ray anode (40) and a temperature sensor to sense with a high-accuracy and prevent X-ray radiation conditions, such as local melting from being caused to the X-ray anode (column 13, line 64 – column 14, line 21). It would have been obvious to one ordinary skill in the art at the time of the invention was made to employ the temperature sensor for the X-ray apparatus, as taught by Kitade in order to monitor temperature and allow the X-ray radiation always be done under safe, high-accuracy and high-efficiency conditions

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
**Conclusion**

4. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Irakli Kiknadze whose telephone number is (703) 305-6464. The examiner can normally be reached on M-F(8:30-5:00).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert Kim can be reached on (703) 305-3492. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 308-7722 for regular communications and (703) 308-7722 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

Irakli Kiknadze  
January 22, 2003

  
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